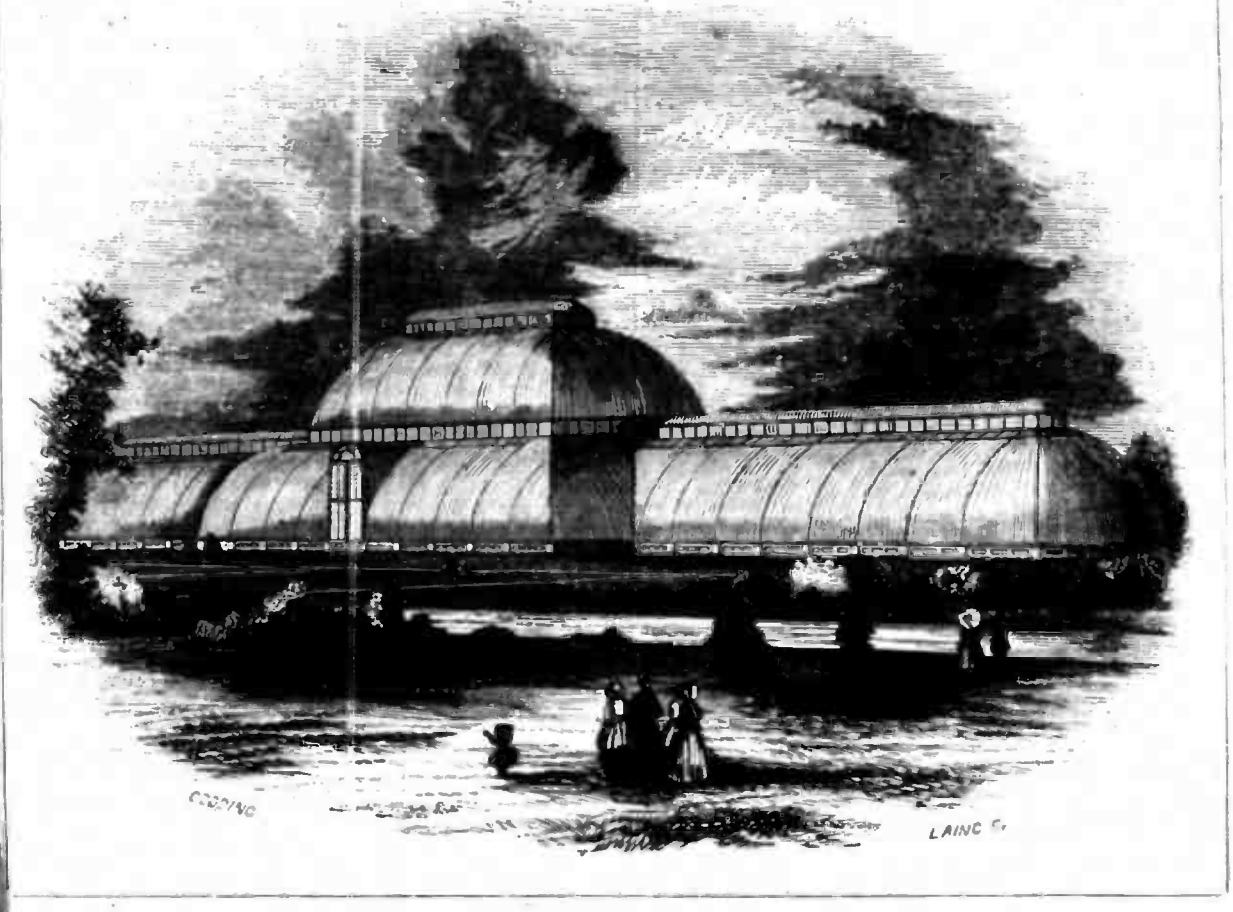
NEW PALM-HOUSE, KEW.



gates then recently completed, under the direction of Mr. Burton, and we alluded to the new palm stove which we now illustrate.

The main ribs of this structure were originally intended to have been formed of cast-iron, but the great improvements subsequently made in the manufacture of wrought-iron (deckbeam) in large scantlings, led to the adoption of the latter material. The main ribs are formed of 9-inch deckbeam-iron of the section shewn in figure 2, obtained in lengths of about 12 feet: these are welded together to the length required, about 42 feet, and bent upon a template to the necessary curve. The ribs are 12 feet 6 inches apart, and foot into cast-iron sockets let into granite blocks upon a concrete foundation, as shewn in the accompanying engraving, which gives the transverse section taken through the centre of the building.

The total length of the house is 362 feet 6 inches in the clear; the centre portion being 137 feet 6 inches long, and 100 feet wide, by 63 feet high in the clear, exclusive of the lantern (6 feet): the wings are each 112 feet 6 inches long and 50 feet wide, and 27 feet high from floor to bottom of lantern. The upper ribs foot into strong cast-iron columns, which receive the upper part of the ribs of the lower roof, and the bearers for a gallery which is continued round the centre of the house. The column heads are connected by a continuous curb of similar scantling to the ribs (see figs. 1 and 2). The whole of the ribs are braced together, and strutted by wrought-iron tie-rods passing through cast-iron tubes, which act as purlins.* The columns are hollow, and conduct the rain-water from the cornice gutter of the upper roof into rain-water tanks, which are formed round the whole interior of the building beneath the stone tables (see T, fig. 4); the water from the lower roof is received into the torus gutter forming the upper part of the pedestal or plinth of the building, and passes from thence into the same tanks.

An iron spiral staircase leads to the gallery, where pipes will be laid, by which the tops of the trees may be watered, the supply being obtained from a reservoir in an ornamental tower at a short distance from the house, which also conceals the chimney-shaft.

Ventilation is amply provided for by rolling sashes on the roofs at S (see transverse section), vertical sashes V hung on centres at the level of the gallery, and in the lanterns. Fresh air may also be admitted through the panels in the stone pedestal of the building (see fig. 4); by simple machinery these ventilators, as well as the windows, will be opened and shut simultaneously.

The whole of the roofs are glazed with sheet glass 21 oz. to the foot, slightly tinged with green, the tint being given by oxide of copper. This has been done to counteract the injurious effects on the vegetation arising from the use of white sheet glass, an arrangement proposed by Mr. Hunt, of the Museum of Economic Geology, and practically carried out in this building for the first time.*

The floor of the house between the surrounding stone paths, is formed of perforated castings, about 4 feet square, supported on wrought-iron bearers and cast-iron uprights (see sections).

The house will be warmed by hot water; the apparatus is calculated to maintain an internal temperature of 80° when the external air is at 20° (Fahrenheit). To effect this, twelve boilers (Messrs. Burbidge and Healy's patent), and 28,000 superficial feet of heating surface in pipes, box tanks or troughs (see PPB, fig. 4) will be laid under the whole of the perforated iron flooring and stone footpaths, and stone table round the house.

Vapour is emitted when required by valves in the tanks, fig. 4.

The boilers, BB in plan, are in two vaults under the house, indicated by the strong dotted line.

The accompanying plan shews one-half the building only: the arrangements throughout the other half are similar.

The vaults communicate with the chimney-tower and coal-yard by a subterranean passage 550 feet in length, containing the smoke flues, and a railway, with iron waggons, to convey fuel and take back the ashes.

Distinct sets of heating pipes are supplied by each boiler, so that according to the number of boilers in use, a higher or lower temperature may be obtained in any particular portion of the house, which may thus be variously climatized at pleasure.

The building and heating apparatus have been constructed by Mr. Richard Turner, of Dublin, and the stonework and foundation by Messrs. Grissell and Peto.*

The total cost of the structure will be about 30,000*l.*, exclusive of the shaft, tunnel, &c.

SHORE UP CUTTINGS.—Last week a workman, named James Hall, was killed by the earth falling in upon him in Bishopsgate-street, during the construction of a sewer. The builder had ordered the men to shore up the ground, but they in their wisdom thought it was solid enough.

* These purlins, or connecting bars between the ribs, are curved; they are formed of a small (1¼th inch) round bar, welded in long lengths, and passing through the ribs, they form a continuous tension-rod all round the house at each purlin (which are 9 or 10 feet apart), with means of straining them as tight as possible. This tension-bar is covered or inclosed in a tubular bar of wrought iron, exactly fitted between the ribs, acting as distance-pieces in opposition to the strain of the tension-bars. This knits the entire structure together.

* A paper on this matter was read by Mr. Hunt before the British Association last year, and is mentioned in THE BUILDER, vol. [illegible], p. 331. Mr. Hunt will further elucidate his views at the Society of Arts on the 16th of next month.

* Great praise is due to Mr. Turner, for the manner in which the work is done. A correspondent on his part remarks—"As nearly all the work of this building has been executed by Irishmen, who are grateful for the employment it has afforded them, I hope you will consider it a proof that the mechanics of that country are disposed to earn their bread in honesty and peace, and are capable of executing works of that kind to the satisfaction of the professional gentlemen of this country."